

CLAIMS

What is claimed is:

1. A journal bearing system comprising:
a bushing; and
a journal pin within the bushing,
wherein at least one of the bushing and journal pin has an engagement surface with an engagement length comprising a substrate material and a solid lubricant, a concentration of the solid lubricant varying along the engagement length.
2. The system of claim 1 wherein:
the concentration is higher near ends of the engagement length than in an intermediate portion.
3. The system of claim 1 wherein:
the concentration varies by at least 50% of a maximum value along said engagement length.
4. The system of claim 1 wherein:
the base material comprises a coating applied to a substrate.
5. The system of claim 1 wherein:
the substrate comprises a copper-based material; and
the solid lubricant comprises a metal.
6. The system of claim 5 wherein:
the solid lubricant metal comprises lead.
7. The system of claim 6 wherein the concentration is:
greater than 30% at first and second locations near first and second ends of the engagement length; and
10-30% in a third location, between the first and second locations.
8. The system of claim 6 wherein the concentration is:

greater than 35% at first and second locations within first and second terminal 20% of the engagement length; and
10-30% over a majority of a central 50% of the length.

9. The system of claim 1 supporting a gear in a turbofan transmission.
10. A hydrodynamic bearing apparatus comprising:
a bushing;
a journal pin; and
means for providing extended operation after a lubricant loss.
11. The apparatus of claim 10 wherein:
the means comprise a longitudinally-varying lead concentration within a copper matrix.
12. A method for preparing a lining for a hydrodynamic bearing comprising:
applying a solid lubricant along the lining, the solid lubricant being applied with concentration that varies along a length of the lining.
13. The method of claim 12 wherein:
the applying of the solid lubricant comprises sputtering.
14. The method of claim 12 wherein:
the applying of the solid lubricant is simultaneous with the application of a base material.